

Claims

- [c1] (1) An electric drive assembly comprising a torque generator; an inverter assembly which is coupled to said torque generator; a current regulator which is coupled to said inverter assembly; and a controller which is coupled to said current regulator, said controller receiving a torque request signal and, in response to said received torque request signal, said controller selects a certain value and generates a signal to said inverter assembly which is effective to cause said inverter assembly to produce a voltage signal having a certain amplitude attribute and a certain phase angle attribute, said controller further compares at least one of said attributes of said voltage signal with said selected certain value and, based upon said comparison, generates a signal indicative of undesired torque generation.
- [c2] (2) The electric drive assembly of Claim 1 wherein said certain value comprises a voltage value.
- [c3] (3) The electric drive assembly of Claim 1 wherein said certain value comprises a phase angle value.
- [c4] (4) The electric drive assembly of Claim 1 wherein said electric drive assembly comprises a positive feedback assembly which is coupled to said controller and which is selectively activated by said signal which is generated by said controller.
- [c5] (5) The electric drive assembly of Claim 4 wherein said signal is generated by said controller only when the difference between said at least one attribute of said voltage signal and said selected certain value is greater than a predetermined value.
- [c6] (6) The electric drive assembly of Claim 5 wherein said predetermined value is about ten percent of said selected certain value.
- [c7] (7) The electric drive assembly of Claim 1 wherein said positive feedback assembly comprises an audio generator.
- [c8] (8) The electric drive assembly of Claim 1 wherein said positive feedback

assembly comprises a visual generator.

[c9] (9) An electric drive assembly comprising a torque map portion which receives a predetermined torque request and which uses said predetermined torque request to produce a predetermined electrical current value; a model portion which receives said predetermined torque request and which uses said predetermined torque request to produce a predetermined voltage value; a current regulator which receives an electrical current signal having a value which is substantially similar to said predetermined electrical current value and which, in response to said receipt of said predetermined electrical current signal, produces a second voltage signal having a predetermined second voltage value; and a diagnostic portion which is coupled to said current regulator and to said model portion and which compares said predetermined voltage value with said predetermined second value, and which determines the existence of a certain condition based upon said comparison.

[c10] (10) The electric drive assembly of Claim 9 wherein said certain condition is determined to exist only if the difference between said certain voltage value and said certain second voltage value exceeds a certain condition threshold value.

[c11] (11) The electric drive assembly of Claim 10 wherein said certain threshold value is about 10% of said certain voltage value.

[c12] (12) The electric drive assembly of Claim 11 wherein said diagnostic portion provides a positive indication of an undesired condition.

[c13] (13) The electric drive assembly of Claim 12 wherein said positive indication comprises the energization of a light.

[c14] (14) The electric drive assembly of Claim 12 wherein said positive indication comprises the energization of a sound device.

[c15] (15) The electric drive assembly of Claim 12 further comprises a selectively activatable machine and wherein said diagnostic portion deactivates said machine upon the detection of said certain condition.

[c16] (16) A method for determining the existence of a certain operational state of an

electric drive assembly of the type which receives a certain torque request and which uses said received certain torque request to produced a voltage command, said method comprising the steps of associating said torque request with a second voltage command; comparing said produced voltage command with said second voltage command; ascertaining the existence of a certain operational state of said electric drive assembly based upon said comparison; and automatically deactivating the electric drive assembly upon the ascertained existence of the certain operational state.

- [c17] (17) The method of Claim 16 further comprising the step of providing a positive indication upon ascertaining the existence of said certain operational state.
- [c18] (18) The method of Claim 17 wherein said step of providing a positive indication comprises the step of energizing a light.
- [c19] (19) The method of Claim 17 wherein said step of providing a positive indication comprises the step of activating a sound device.

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